



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2016-6143; Product Identifier 2015-NM-028-AD; Amendment 39-19821; AD 2020-01-15]

RIN 2120-AA64

Airworthiness Directives; Airbus SAS Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all Airbus SAS Model A300 B4-600, B4-600R, and F4-600R series airplanes, and Model A300 C4-605R Variant F airplanes (collectively called Model A300-600 series airplanes), and certain Model A310 series airplanes. This AD was prompted by the FAA's analysis of the fuel system reviews on these models conducted by the manufacturer. This AD requires modifying the fuel quantity indicating system (FQIS) to prevent development of an ignition source inside the center fuel tank due to electrical fault conditions. This AD also provides alternative actions for cargo airplanes. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES:**Examining the AD Docket**

You may examine the AD docket on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2016-6143; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Dan Rodina, Aerospace Engineer, International Section, Transport Standards Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone and fax 206-231-3225.

SUPPLEMENTARY INFORMATION:**Discussion**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all Airbus SAS Model A300 B4-600, B4-600R, and F4-600R series airplanes, and Model A300 C4-605R Variant F airplanes (collectively called Model A300-600 series airplanes), and certain Model A310 series airplanes. The NPRM published in the Federal Register on May 3, 2016 (81 FR 26493). The NPRM was prompted by the FAA's analysis of the fuel system reviews on these models conducted by the manufacturer. The NPRM proposed to require modifying the FQIS to prevent development of an ignition source inside the center fuel tank due to electrical fault conditions. The NPRM also proposed alternative actions for cargo airplanes.

The FAA is issuing this AD to address ignition sources inside the center fuel tank, which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

Comments

The FAA gave the public the opportunity to participate in developing this final rule. The following presents the comments received on the NPRM and the FAA's response to each comment.

Support for NPRM

The Air Line Pilots Association, International (ALPA) and National Air Traffic Controllers Association (NATCA) supported the intent of the NPRM. Additional comments from NATCA are addressed below.

Requests to Withdraw NPRM: EASA's Different Risk Assessment Policy

Airbus and the European Aviation Safety Agency (EASA) noted differences between EASA's risk assessment policy and that of the FAA. Based on its own criteria, EASA concluded that there is no unsafe condition, and that in the absence of a TARAM (transport airplane risk assessment methodology) analysis, EASA concluded the NPRM was based on noncompliance with Special Federal Aviation Regulation (SFAR) 88—Fuel Tank System Fault Tolerance Evaluation Requirements, to 14 CFR part 21 (66 FR 23086, May 7, 2001), and, more specifically, with 14 CFR 25.981(a)(3) as amended by amendment 25-102 (66 FR 23086, May 7, 2001), rather than a direct unsafe condition. The commenters asserted that Airbus has shown that the failure condition described in the NPRM is extremely improbable and not unsafe according to EASA policy. The commenters therefore considered the proposed corrective actions unnecessary.

The FAA infers that the commenters would like the NPRM withdrawn. The FAA disagrees with this proposal. The FAA does not agree that the NPRM was based simply on a noncompliance with 14 CFR 25.981(a) identified from the manufacturer's fuel system reviews. This final rule addresses an unsafe condition identified by the FAA. The FAA determined that an unsafe condition exists using the criteria in FAA Policy Memorandum ANM100-2003-112-15, "SFAR 88 – Mandatory Action Decision Criteria," dated February 25, 2003¹. That policy was used to evaluate the noncompliant design areas identified in the manufacturer's fuel system reviews and to determine which noncompliance issues were unsafe conditions that required corrective action under 14 CFR part 39. The FAA's unsafe condition determination was not based on an assessment of average risk or total fleet risk, but rather was driven by the qualitative identification of an unacceptable level of individual risk that exists on flights that are anticipated to occur with a preexisting latent in-tank failure condition and with a flammable center fuel tank. For these reasons, and based on further detailed responses to similar comments in supplemental NPRM (SNPRM) Docket No. FAA-2012-0187 (80 FR 9400, February 23, 2015), and in the subsequently issued final rule, AD 2016-07-07, Amendment 39-18452 (81 FR 19472, April 5, 2016) ("AD 2016-07-07"), which addressed the same unsafe condition for Boeing Model 757 airplanes, the FAA has determined that it is necessary to issue this final rule.

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[http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/dc94c3a46396950386256d5e006aed11/\\$FILE/Feb2503.pdf](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf/0/dc94c3a46396950386256d5e006aed11/$FILE/Feb2503.pdf)

Request to Withdraw NPRM: Probability Analysis Inconsistent with Regulatory Requirements

Airlines for America and the Cargo Airline Association, in consolidated comments (A4A/CAA), United Parcel Service (UPS), and FedEx stated that the assumption of a single failure regardless of probability is inconsistent with 14 CFR part 25 regulatory requirements. The commenters referred to the phrase “regardless of probability” associated with single failures. A4A/CAA and UPS acknowledged that the term is used with single failures in FAA Advisory Circular (AC) 25.981-1C², “Fuel Tank Ignition Source Prevention Guidelines,” but since that term does not appear in 14 CFR 25.981(a)(3), the commenters considered its use arbitrary, possibly introducing additional requirements not included in that section. FedEx also considers a “worst anticipated flight” as a flight with a latent failure. FedEx added that unless the remote likelihood of a latent failure is considered under 14 CFR 25.981(a)(3), the probability of a catastrophic event is exaggerated. A4A/CAA and UPS stated that the “worst reasonably anticipated flight” is a flight with a latent FQIS failure and a high-flammability tank, and this “latent plus one” failure – regardless of probability of a single failure – is not consistent with 14 CFR 25.981(a)(3).

The FAA infers that the commenters would like the NPRM withdrawn. The FAA disagrees with this proposal, and disagrees with the commenters’ assertions regarding the intent of 14 CFR 25.981(a)(3). The intent of the single failure clause in 14 CFR 25.981(a)(3) is to set a general fail-safe minimum safety standard for the prevention of fuel tank ignition sources. The intent of the latent failure plus single failure clause in 14 CFR 25.981(a)(3) is to explicitly set a requirement for a fail-safe configuration (with

² https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_25.981-1C.pdf

respect to ignition sources) to be provided on flights that occur with any latent condition that cannot be shown to be extremely remote. Such flights are reasonably anticipated to occur multiple times in a fleet of aircraft of a given type, and those flights are required to be fail safe. These requirements were included in 14 CFR 25.981(a)(3) in recognition of the fact that simply providing a system that meets the extremely improbable average risk requirement of 14 CFR 25.1309(b) is not sufficient to prevent all catastrophic accidents. Systems that provide dual redundancy rather than triple redundancy, and that have one or both features susceptible to latent failure conditions, may pass the average risk test of 14 CFR 25.1309(b). However, such systems would not be fail safe on flights with latent failures, and may have an average probability of catastrophic failure – on those non-fail-safe flights – that is 100 or even 1,000 times worse than the overall risk on an average transport airplane flight. This would not meet the expectation of the public or Congress for the level of safety on each transport airplane flight. 14 CFR 25.981(a)(3) sets standards that are intended to prevent such high-risk flights and non-fail-safe flights.

The intent of 14 CFR 25.981(a)(3) is clear from the plain language of the rule. In every system safety analysis requirement in a 14 CFR part 25 regulation where the FAA intends a probabilistic condition or modifier to be associated with a requirement, that condition or modifier is explicitly stated in the wording of the rule in qualitative terms that are further defined in guidance material. Absence of such wording is clear evidence of the absence of an intended probabilistic condition or modifier. In other words, in the absence of a specific probabilistic qualifier, the intent of prescriptive prohibition is that it applies “regardless of probability.”

The intent of 14 CFR 25.981(a)(3) with respect to the “regardless of probability” intent questioned by the commenters was also stated clearly in the preamble of the NPRM for 14 CFR 25.981, amendment 25-102. That preamble to the NPRM stated, in pertinent part, as follows.

This proposal would also add a new paragraph (a)(3) to require that a safety analysis be performed to demonstrate that the presence of an ignition source in the fuel tank system could not result from any single failure, from any single failure in combination with any latent failure condition not shown to be extremely remote, or from any combination of failures not shown to be extremely improbable. These new requirements define three scenarios that must be addressed in order to show compliance with the proposed paragraph (a)(3). The first scenario is that any single failure, regardless of the probability of occurrence of the failure, must not cause an ignition source. The second scenario is that any single failure, regardless of the probability occurrence, in combination with any latent failure condition not shown to be at least extremely remote (i.e., not shown to be extremely remote or extremely improbable), must not cause an ignition source. The third scenario is that any combination of failures not shown to be extremely improbable must not cause an ignition source.

The preamble to the final rule for amendment 25-102 made a nearly identical statement, including the same uses of the phrase “regardless of probability.”

The FAA does not agree with FedEx’s related comment that the assumption of a preexisting failure on the worst anticipated flight “exaggerates the probability of a catastrophic event.” In fact, FedEx’s apparently preferred method to characterize the probability of a catastrophic event as equal to the average probability of the event on all flights fails to assess the degree to which risk is concentrated on flights with latent failures, and simply does not assess the actual risk on such flights. The FAA has previously determined, in the promulgation of amendment 25-102, in development of the

AD decision policy for issues identified through SFAR 88 reviews, and in the general assessment of potential unsafe conditions on transport airplanes under the TARAM policy, that assessment of risk on the worst anticipated flights is fundamental to providing a minimum acceptable level of safety on each reasonably anticipated flight as expected by Congress and the public.

No change to the AD was made in response to these comments.

Request to Withdraw NPRM: Reconsider Center Wing Fuel Tank Flammability Exposure Time

A4A/CAA, UPS, and Airbus requested that the FAA withdraw the NPRM based on their assertion that the current design of the center wing fuel tank is safe. According to the commenters, Airbus has shown that the center wing fuel tank does not meet the policy criteria set forth for a high-flammability exposure time fuel tank in SFAR 88.

The FAA disagrees with the commenters' request. Airbus originally submitted its flammability exposure time analysis in accordance with FAA Policy Memorandum ANM100-2003-112-15, as requested by the FAA and not in response to SFAR 88 since the submission was not a requirement of SFAR 88. As a result of the original Airbus analysis, the center wing fuel tanks on Model A300-600 and A310 series airplanes were categorized as having high fleet average flammability exposure time. In the resubmitted analysis, however, Airbus did not follow FAA Policy Memorandum ANM100-2003-112-15, when it incorrectly adjusted the standardized FAA Monte Carlo analysis to account for cargo-only operations in the U.S. This resulted in a significant deviation from the FAA Monte Carlo analysis used to consistently evaluate fleet average flammability exposure time for numerous airplane models across multiple manufacturers. Deviating from the standardized modeling technique, as Airbus has done, nullifies the

basis for comparison of the Airbus analysis results to the 7-percent criterion established for determining whether a fuel tank has high- or low-flammability exposure time per the FAA Policy Memorandum ANM100-2003-112-15. As with any standardized testing or analysis methods, deviating from the standardized model and input affects the validity and applicability of the standardized pass/fail criteria. The 7-percent criterion is valid only when the standardized FAA Monte Carlo method is used without deviation; for this reason, the FAA does not accept an analysis developed with variables to account for specific fleet or subfleet operations. The FAA, based on its application of Policy Memorandum ANM100-2003-112-15, has therefore determined that it is necessary to proceed with issuance of this final rule.

Request to Withdraw NPRM: No New Data Since Fuel Tank Flammability Reduction (FTFR) Rulemaking

A4A/CAA and UPS requested that the FAA withdraw the NPRM based on a lack of new data since the issuance of the FTFR rule (73 FR 42444, July 21, 2008). The commenters referred to the FTFR rule and decision to not require flammability reduction means (FRM) for all-cargo airplanes, and the FAA's intent to gather additional data and consideration of further rulemaking if flammability of these airplanes is excessive. The commenters also referred to the FAA's response to comments in the preamble to the SNPRM for Docket No. FAA-2012-0187, which documented the FAA's decision on applicability of FRM and cost estimates. The commenters stated that the FAA response was misleading and not factual since manufacturers did not begin detailed designs to address the proposed unsafe condition until after the FTFR rule was published. The commenters added that the FAA did not discuss other changes to the FQIS system in the FTFR rule.

The FAA disagrees with the commenters' request. In the preamble to the FTFR rule, the FAA indicated the possibility of later changing its position and proposing inerting for cargo airplanes if later data shows the flammability on cargo airplanes is excessive. The determination that including cargo airplanes in the FTFR rule's requirement to retrofit airplanes with FRM would not be cost effective was based in part on the assumption that corrective actions would be required for the FQIS unsafe condition identified under FAA Policy Memorandum ANM100-2003-112-15. Since that determination, manufacturers have updated their cost estimates based on subsequent detailed design work. The FAA responded to similar comments in the preamble to the final rule for AD 2016-07-07. The FAA has therefore determined that it is necessary to proceed with this final rule.

Request to Withdraw NPRM: Arbitrary and Inconsistent Wire Separation Standards

A4A/CAA, FedEx, and UPS requested that the FAA withdraw the NPRM based on a lack of consistent design standards for FQIS wire separation. The commenters assumed that the approved standard for the retrofit is a 2-inch wire separation minimum, which the commenters considered arbitrary and inconsistently applied. The commenters reported that the amount of wiring capable of meeting that separation standard varies widely among airplane models. A4A/CAA and UPS also acknowledged that other separation methods were used in areas not meeting the 2-inch wire separation requirement.

The FAA disagrees with the commenters' request to withdraw the NPRM. Because of configuration differences between different airplane designs, as the

commenter also notes, the FAA has not defined a universal minimum standard for wiring design, including wire separation, as explained in paragraph 8.3.3 of AC 25.981-1D³:

Wiring designs used on transport category airplanes vary significantly between manufacturers and models; therefore, it is not possible to define a specific, universal, separation distance, or the characteristics of physical barriers between wire bundles, to protect critical wiring from damage.

AC 25.981-1D also notes the following:

Some areas of an airplane may have localized areas where maintaining a general physical separation distance is not feasible. This is especially true in smaller transport category airplanes or in areas where wiring spans the wing-to-body join of larger transport airplanes. In those areas that limit separation distance, additional means of ensuring physical separation and protection of the wiring may be necessary. Testing and/or analysis used to show that the reduced separation distance is acceptable should be conservative and consider the worst possible failure condition not shown to be extremely improbable. The applicant should substantiate that the means to achieve the reduced separation provides the necessary level of protection for wire-related failures and electromagnetic effects.

In addition, the FAA provided a detailed response to similar comments in the preamble to the final rule for AD 2016-07-07. The FAA has therefore determined that it is necessary to proceed with issuance of this final rule.

Request to Withdraw NPRM: NPRM Arbitrary and Inconsistently Applied

A4A/CAA and UPS requested that the FAA withdraw the NPRM based on the commenters' assertion that the NPRM is arbitrary and inconsistently applied. The commenters noted that airplanes with FRM are not included in the applicability, and the NPRM would therefore not fully address the unsafe condition. The commenters added

³ https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_25.981-1D.pdf

that the distinction between high- and low-flammability exposure time fuel tanks as used in the NPRM is arbitrary. The commenters stated that an arbitrary differentiation of high/low flammability as decisional criteria for the need for corrective action does not take into account the actual probability of the impact of the difference in flammability on the potential of catastrophic failure. The commenters also stated that allowing the proposed alternative actions for cargo airplanes does not fully address the unsafe condition in the NPRM. The commenters referenced the FAA's response to comments in AD 2016-07-07 regarding this issue.

The FAA disagrees with the assertion that the NPRM is arbitrary and inconsistent. The NPRM follows defined policy in FAA Policy Memorandum ANM100-2003-112-15, and consistently applies the policy to several airplane models with similar unsafe conditions, similar to AD 2016-07-07. The FAA defined the difference between low- and high-flammability exposure time fuel tanks based on recommendations from the Aviation Rulemaking Advisory Committee Fuel Tank Harmonization Working Group (FTHWG). The preamble to the final rule for amendment 25-102, which amended 14 CFR 25.981, defines this difference:

The level of flammability defined in the proposal was established based upon comparison of the safety record of center wing fuel tanks that, in certain airplanes, are heated by equipment located under the tank, and unheated fuel tanks located in the wing. The FTHWG concluded that the safety record of fuel tanks located in the wings was adequate and that if the same level could be achieved in center wing fuel tanks, the overall safety objective would be achieved.

In the response to comments in the preamble to the final rule for AD 2016-07-07 referenced by the commenters, the FAA described why FRM or alternative actions for

cargo airplanes provide an acceptable level of safety, even if they do not completely eliminate the non-compliance with 14 CFR 25.981(a)(3).

The FAA has determined that it is necessary to proceed with issuance of this final rule.

Request to Withdraw NPRM: Insufficient Justification for AD

Based on an assertion that the FAA did not sufficiently explain how the unsafe condition justifies AD rulemaking, UPS requested that the FAA withdraw the NPRM. UPS stated that the FTFR rule did not suggest that any future modifications of FQIS systems had been considered. UPS contended that all-cargo operators were surprised and prejudiced by costly proposed FQIS modifications that are unsupported by both an updated risk assessment and full cost/benefit analysis that consider the pertinent facts. UPS alleged that the FAA did not fully explain or justify its decision making for the NPRM, and concluded that the NPRM is arbitrary and does not reflect properly reasoned agency action.

The FAA disagrees with the commenter's request. The justification for this AD was extensively described in the NPRM, in response to comments described elsewhere in this final rule, and in the AD rulemaking actions related to AD 2016-07-07, as explained in the response to "Request to Withdraw NPRM: Probability Analysis Inconsistent with Regulatory Requirements" in this final rule. The FAA has therefore determined that it is necessary to proceed with issuance of this final rule.

Request for Safety Risk Assessment and Cost-Benefit Analysis

FedEx requested that a safety risk assessment and cost-benefit analysis be done to justify the required modification. FedEx asserted that the NPRM did not provide the

reduction in probability of a fuel tank explosion if the modification is done, but FedEx noted that evidence should exist to support the modification since there can be multiple modifications required, and a cost-benefit analysis should be done showing that the modification provides an acceptable level of safety.

The FAA disagrees with the commenter's request. This final rule addresses an unsafe condition as described in 14 CFR part 39. The FAA previously provided cost estimates in the NPRM and described why corrective actions are necessary to address the unsafe condition. In addition, the FAA's detailed response to similar comments and the description of the FAA's risk assessment in the preamble of the SNPRM for Docket No. FAA-2012-0187, and in the preamble to the final rule for the subsequently issued AD 2016-07-07, adequately address these issues. Therefore, the FAA has not changed this final rule regarding this issue.

Request to Revise Description of Determination of Unsafe Condition

Airbus requested that the FAA revise the NPRM to state that the unsafe condition is based on reviews by the FAA, not the manufacturer. Based on the fuel tank safety reviews and its analysis of real-world data specific to cargo aircraft operated in the U.S., Airbus concluded that the "latent plus one condition" associated with a high-flammability exposure time fuel tank does not exist.

The FAA partially agrees with the commenter's request. As previously discussed, the FAA considers the center wing fuel tanks of Model A300-600 and Model A310 airplanes as high-flammability exposure time fuel tanks; therefore, the criteria for an unsafe condition are met as described in FAA Policy Memorandum ANM100-2003-112-15. However, the FAA agrees to clarify that the unsafe condition was determined by the

FAA's analysis of the manufacturer's fuel system reviews and has revised this final rule accordingly.

Request to Remove Model A310-200

Airbus requested that the FAA remove Model A310-200 airplanes from the applicability of the proposed AD. Airbus stated that no Model A310-200 airplanes have been operational under 14 CFR part 135 since April 2016, and Airbus has no plans to develop modifications to the aircraft wiring for those airplanes.

The FAA agrees with the commenter's request to remove Model A310-200 airplanes from the applicability of the AD. Since the NPRM was issued, all Model A310-200 airplanes have been removed from service. The FAA has revised this AD accordingly.

Request to Include Service Information

Airbus reported that it is developing inspection service bulletins for Model A300-600 and A310 series airplanes as a method of compliance with paragraph (h)(1) of the proposed AD. Airbus also reported that it is developing a modification service bulletin for Model A300-600 series airplanes as a method of compliance with paragraph (h)(2) of the proposed AD.

The FAA infers that Airbus would like the FAA to include this service information in this AD. Because these service bulletins are not yet approved or available, the FAA cannot identify them as the source of service information for the referenced requirements in this AD. However, if Airbus releases service information that adequately addresses the unsafe condition regarding the inspection and/or modification requirements,

the FAA may consider the service information as an alternative method of compliance (AMOC) for this AD. The FAA has not changed this AD regarding this issue.

Request to Change Compliance Time

A4A/CAA, FedEx, and Airbus requested that the FAA extend the compliance time from 60 months to 72 months for the modification specified in the proposed AD. Airbus and FedEx stated that the compliance time should match that of AD 2016-07-07 because the unsafe condition and corrective actions are similar. Airbus stated that the additional time is appropriate due to the modification's anticipated complexity, development time and cost, cost of kits, and airplane downtime. In addition, Airbus and FedEx both expressed concerns about the feasibility of the modification due to the potential effects of existing FQIS modifications through supplemental type certificates. A4A/CAA stated that although service information was not yet available, the compliance time should align with major maintenance schedules, but should be not less than 72 months after service information is available.

Conversely, NATCA recommended that the FAA reject requests for a compliance time longer than 5 years as proposed in the NPRM. Assuming final rule issuance in 2016, NATCA stated that a 5-year compliance time would result in required compliance by 2021 – 25 years after the TWA Flight 800 fuel tank explosion that led to the requirements in SFAR 88, and 20 years after issuance of SFAR 88.

The FAA agrees with the commenters' requests to extend the compliance time, and disagrees with NATCA's request. The FAA received similar requests to extend the compliance time from several commenters regarding the NPRMs for the FQIS modification on other airplanes. The FAA disagrees with establishing a compliance time

based on issuance of the service information that is not yet approved or available. The FAA has determined that a 72-month compliance time is appropriate and will provide operators adequate time to prepare for and perform the required modifications without excessive disruption of operations. The FAA has determined that the requested moderate increase in compliance time will continue to provide an acceptable level of safety. The FAA has changed paragraphs (g) and (h)(2) of this AD accordingly.

Request to Clarify Certification Basis for Modification Requirements

NATCA recommended that the FAA revise paragraph (g) of the proposed AD to clearly state that the required FQIS design changes must comply with the fail-safe requirements of 14 CFR 25.901(c), amendment 25-46 (43 FR 50597, October 30, 1978), and 14 CFR 25.981(a) and (b), amendment 25-102; NATCA added that these provisions are required by SFAR 88.

The FAA infers that NATCA is proposing that the certification basis of the design changes to the FQIS system design be at the amendment levels cited above. The FAA further infers that NATCA proposes that the FAA require the entire FQIS system design to comply at those amendment levels rather than allowing only a portion of the system to comply with those amendments. The FAA partially agrees with NATCA's request. The FAA agrees that the design change must comply with the applicable certification basis, because design changes are required to comply with the applicable certification basis under part 21. The FAA disagrees, however, with identifying the specific certification basis in this AD, because it varies by design. In addition, the FAA previously identified in the preamble of the SNPRM for AD 2016-07-07 in the response to comments under "Requests To Withdraw NPRM (77 FR 12506, March 1, 2012) Based on Applicability"

that the option for cargo airplanes will require a partial exemption from 14 CFR 25.901(c) and 25.981(a)(3). The partial exemption is needed because portions of the FQIS would remain unmodified, and the overall system would therefore still not fully comply with those regulations. The FAA has already granted such exemptions for other airplane models. Identifying these amendments as required would also not take into account exceptions (reversions to earlier versions of regulations) granted in the certification basis under 14 CFR 21.101. The FAA has not changed this AD regarding this issue.

Request to Address Unsafe Condition on All Fuel Tanks

NATCA recommended that the FAA require design changes that eliminate unsafe FQIS failure conditions on all fuel tanks on the affected models, regardless of fuel tank location or the percentage of time the fuel tank is flammable. NATCA referred to four fuel tank explosions in low-flammability exposure time fuel tanks identified by the FAA during FTFR rulemaking. NATCA stated that neither FRM nor alternative actions for cargo airplanes (e.g., BITE checks (checks of built-in test equipment) followed by applicable repairs before further flight and modification of the center fuel tank FQIS wiring within 72 months) would bring the airplane into full regulatory compliance. NATCA added that the combination of failures described in the NPRM meets the criteria for “known combinations” of failures that require corrective action in FAA Policy Memorandum ANM100-2003-112-15.

The FAA disagrees with the commenter’s request. The FAA has determined that according to Policy Memorandum ANM100-2003-112-15, the failure condition for the airplanes affected by this AD should not be classified as a “known combination.” While

the FQIS design architecture is similar to that of the early Boeing Model 747 configuration that is suspected of contributing to the TWA Flight 800 fuel tank explosion, significant differences exist in the design of FQIS components and wire installations between the affected Airbus SAS models and the early Model 747 airplanes such that the intent of the “known combinations” provision for low-flammability fuel tanks in the policy memorandum is not applicable. Therefore, this AD affects only the identified Airbus airplanes with high-flammability exposure time fuel tanks, as specified in paragraph (c) of this AD. The FAA provided a detailed response to similar comments in the preamble of the final rule for AD 2016-07-07. The FAA has not changed this final rule regarding this issue.

Request to Require Modifications on All Production Airplanes

NATCA recommended that the FAA require designs that comply with 14 CFR 25.901(c) and 25.981(a)(3) on all newly produced transport airplanes. NATCA stated that continuing to grant exemptions to 14 CFR 25.901(c), as amended by amendment 25-40 (42 FR 15042, March 17, 1977), and 14 CFR 25.981(a)(3), as amended by amendment 25-102, has allowed continued production of thousands of airplanes with this known unsafe condition.

The FAA disagrees with the commenter’s request. The recommendation to require production airplanes to fully comply with 25.901(c) and 25.981(a)(3) is outside the scope of this rulemaking. This AD applies only to Model A300-600 and Model A310 airplanes, which are no longer in production. The FAA has not changed this final rule regarding this issue.

Request to Require Design Changes from Manufacturers

NATCA recommended that the FAA follow the agency's compliance and enforcement policy to require manufacturers to develop the necessary design changes soon enough to support operators' ability to comply with the proposed requirements. NATCA noted that SFAR 88 required manufacturers to develop all design changes for unsafe conditions identified by their SFAR 88 design reviews by December 2002, or within an additional 18 months if the FAA granted an extension.

The FAA acknowledges the commenter's concerns. However, any enforcement action is outside the scope of this rulemaking. The FAA has not changed this final rule regarding this issue.

Clarification of BITE Check Compliance Time

The FAA has revised paragraph (h)(1) of this AD to clarify the compliance time for the BITE check relative to the requirement to record the fault codes. The FAA recognized that operators might interpret the proposed requirements for alternative actions for cargo airplanes as allowing additional flights prior to performing the BITE check after first recording the fault codes. The FAA intended for operators to perform the BITE check immediately after recording the fault codes to address both the fault codes that exist prior to performing the BITE check and any new codes that are identified during the BITE check.

Additional Compliance Time Change

For consistency with similar ADs related to FQIS, the FAA has revised paragraph (h)(1) of this AD to change the repetitive interval for recording the existing fault codes stored in the fuel quantity indicating (FQI) computer and performing the BITE check

from “not to exceed 650 flight hours” to “not to exceed 750 flight hours.” The FAA has determined that this change continues to provide an acceptable level of safety.

Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this final rule with the changes described previously and minor editorial changes. The FAA has determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM for addressing the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

The FAA also determined that these changes will not increase the economic burden on any operator or increase the scope of this final rule.

Costs of Compliance

The FAA estimates that this AD affects 122 airplanes of U.S. registry.

The FAA also estimates that it would take about 1,200 work-hours per product to comply with the basic requirements of this AD. The average labor rate is \$85 per work-hour. The FAA has received no definitive data that would enable us to provide cost estimates for the parts needed to do the required actions. Based on these figures, The FAA estimates the labor cost of this AD on U.S. operators to be \$12,444,000, or \$102,000 per product.

The FAA has not received definitive information on the costs for the alternative wire separation modification specified in this AD. The cost for this action in similar

rulemaking on other airplanes, however, suggests that this modification could take about 74 work-hours, with parts costing about \$10,000, for a total estimated cost to U.S. operators of \$16,290 per product.

The FAA estimates that the repetitive FQIS tank circuit checks associated with the alternative wire separation modification would take about 1 work-hour per check. The FAA estimates the cost of this check on U.S. operators to be \$85 per product, per check.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has

delegated the authority to issue ADs applicable to transport category airplanes and associated appliances to the Director of the System Oversight Division.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2020-01-15 Airbus SAS: Amendment 39-19821 ; Docket No. FAA-2016-6143; Product Identifier 2015-NM-028-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Airbus SAS airplanes, certificated in any category, identified in paragraphs (c)(1) through (5) of this AD.

(1) Model A300 B4-601, B4-603, B4-620, and B4-622 airplanes.

(2) Model A300 B4-605R and B4-622R airplanes.

(3) Model A300 F4-605R and F4-622R airplanes.

(4) Model A300 C4-605R Variant F airplanes.

(5) Model A310-304, -322, -324, and -325 airplanes.

(d) Subject

Air Transport Association (ATA) of America Code 28, Fuel.

(e) Unsafe Condition

This AD was prompted by the FAA's analysis of fuel system reviews on the affected airplanes conducted by the manufacturer. The FAA is issuing this AD to prevent ignition sources inside the center fuel tank, which, in combination with flammable fuel vapors, could result in a fuel tank explosion and consequent loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Modification

Within 72 months after the effective date of this AD, modify the fuel quantity indicating system (FQIS) to prevent development of an ignition source inside the center fuel tank due to electrical fault conditions, using a method approved by the Manager, International Section, Transport Standards Branch, FAA.

(h) Alternative Actions for Cargo Airplanes

For airplanes used exclusively for cargo operations: As an alternative to the requirements of paragraph (g) of this AD, do the actions specified in paragraphs (h)(1) and (h)(2) of this AD. To exercise this alternative, operators must perform the first inspection required under paragraph (h)(1) of this AD within 6 months after the effective date of this AD. To exercise this alternative for airplanes returned to service after conversion of the airplane from a passenger configuration to an all-cargo configuration more than 6 months after the effective date of this AD, operators must perform the first inspection required under paragraph (h)(1) of this AD prior to further flight after the conversion.

(1) Within 6 months after the effective date of this AD, record the existing fault codes stored in the fuel quantity indicating (FQI) computer, and before further flight thereafter, do a BITE check (check of built-in test equipment) of the FQI computer, using a method approved by the Manager, International Section, Transport Standards Branch, FAA. If any fault code is recorded prior to the BITE check or as a result of the BITE check, before further flight, do all applicable repairs and repeat the BITE check until a

successful test is performed with no fault found, using a method approved by the Manager, International Section, Transport Standards Branch, FAA. Repeat these actions thereafter at intervals not to exceed 750 flight hours. Modification as specified in paragraph (h)(2) of this AD does not terminate the repetitive BITE check requirement of this paragraph.

(2) Within 72 months after the effective date of this AD, modify the airplane by separating FQIS wiring that runs between the FQI computer and the center fuel tank wall penetrations, including any circuits that might pass through a main fuel tank, from other airplane wiring that is not intrinsically safe, using methods approved by the Manager, International Section, Transport Standards Branch, FAA.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, International Section, Transport Standards Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the International Section, send it to the attention of the person identified in paragraph (j) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Dan Rodina, Aerospace Engineer, International Section, Transport Standards Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone and fax 206-231-3225.

(k) Material Incorporated by Reference

None.

Issued on January 31, 2020.

Michael Kaszycki, Acting Director,
System Oversight Division,
Aircraft Certification Service.

[FR Doc. 2020-02512 Filed: 2/10/2020 8:45 am; Publication Date: 2/11/2020]